

# Williamsburg Village Regional Stormwater Pond Retrofit Project

Public Meeting: July 26, 2017



DEPARTMENT OF  
**ENVIRONMENTAL  
PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

Working together for a cleaner, greener  
economically vibrant community



# Introductions

**Michael Perkins**

Project Manager (Consultant), DEP

**Paul Bogle**

Senior Engineer, DEP

**Matthew Ernest, P.E.**

Associate/Water Resource Engineer, A. Morton Thomas and Associates

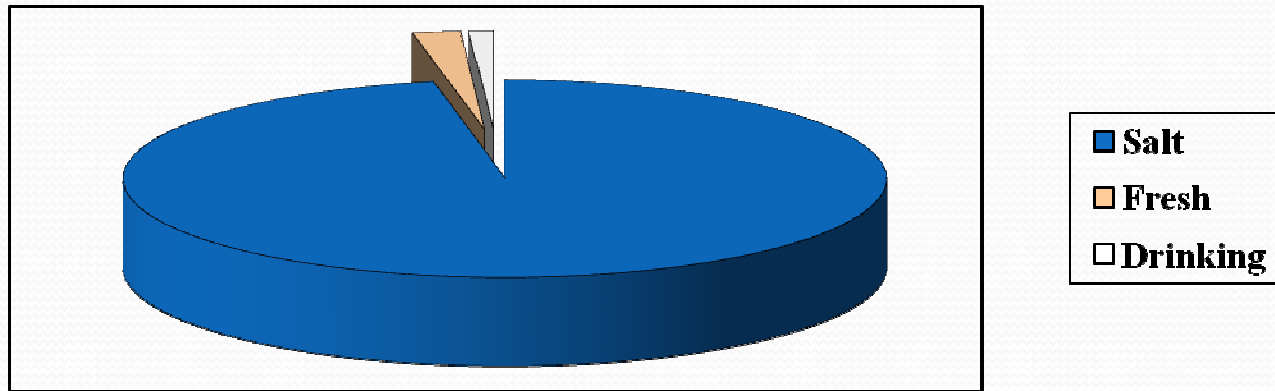




# Tonight's Agenda

- Sources of water
- Montgomery County background
- What is a watershed?
- Introduction to stormwater runoff
- What the County is doing to protect our waterways
- Project goals
- Proposed pond retrofit designs
- Examples of similar projects
- What to expect during construction
- Project schedules
- Questions/Comments

# Sources of Water

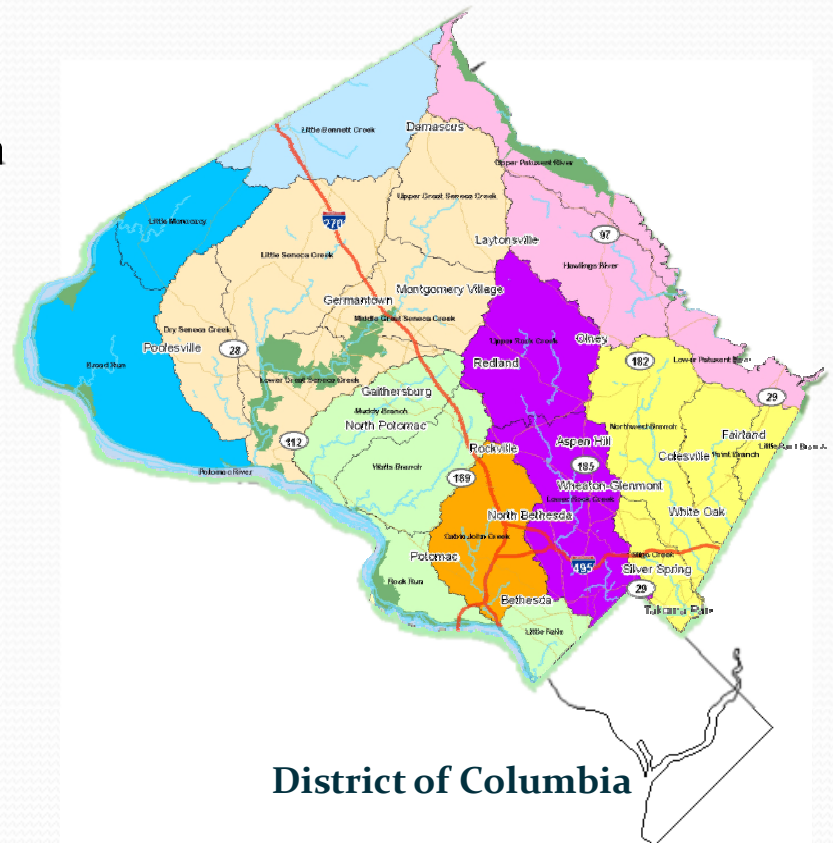


- About 97% is salt water
- About 2% is fresh
- Only 1% is available for drinking water
  - 95% from groundwater across the Country
  - 32% from groundwater, 68% from surface water in Maryland
    - Potential for greater impacts from runoff in Maryland



# Montgomery County, MD

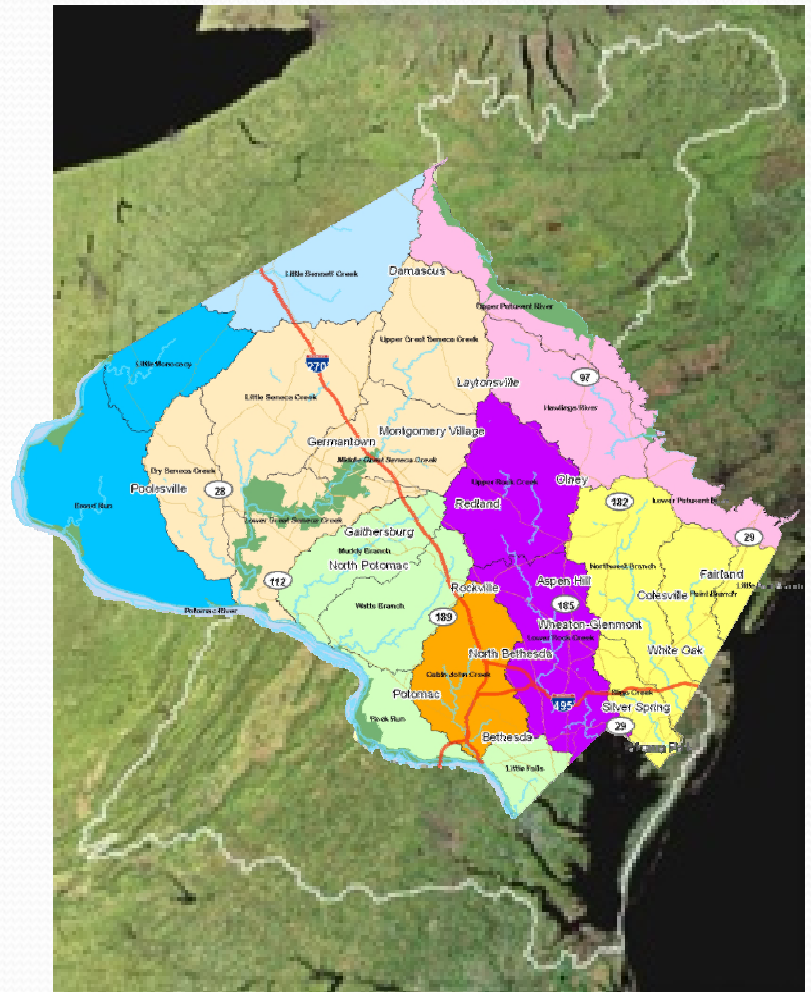
- Over 1,000,000 people
  - Second only to Baltimore City within Maryland in average people per square mile
- 500 sq. miles
- About 12% impervious surface overall
  - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
  - Potomac
  - Patuxent
- Eight local *watersheds*



**Impervious:** Not allowing water to soak through the ground.

# What is a Watershed?

- A ***watershed*** is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
  - Chesapeake Bay
  - Eight local watersheds
  - Neighborhood (to a storm drain)





# What is Runoff?

Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

- **Directly into streams**
- **Into storm drain pipes, eventually leading to streams**
- **Into stormwater management facilities, then streams**

**Two Major Issues:**  
**Volume/Timing of Runoff**  
**Water Quality**

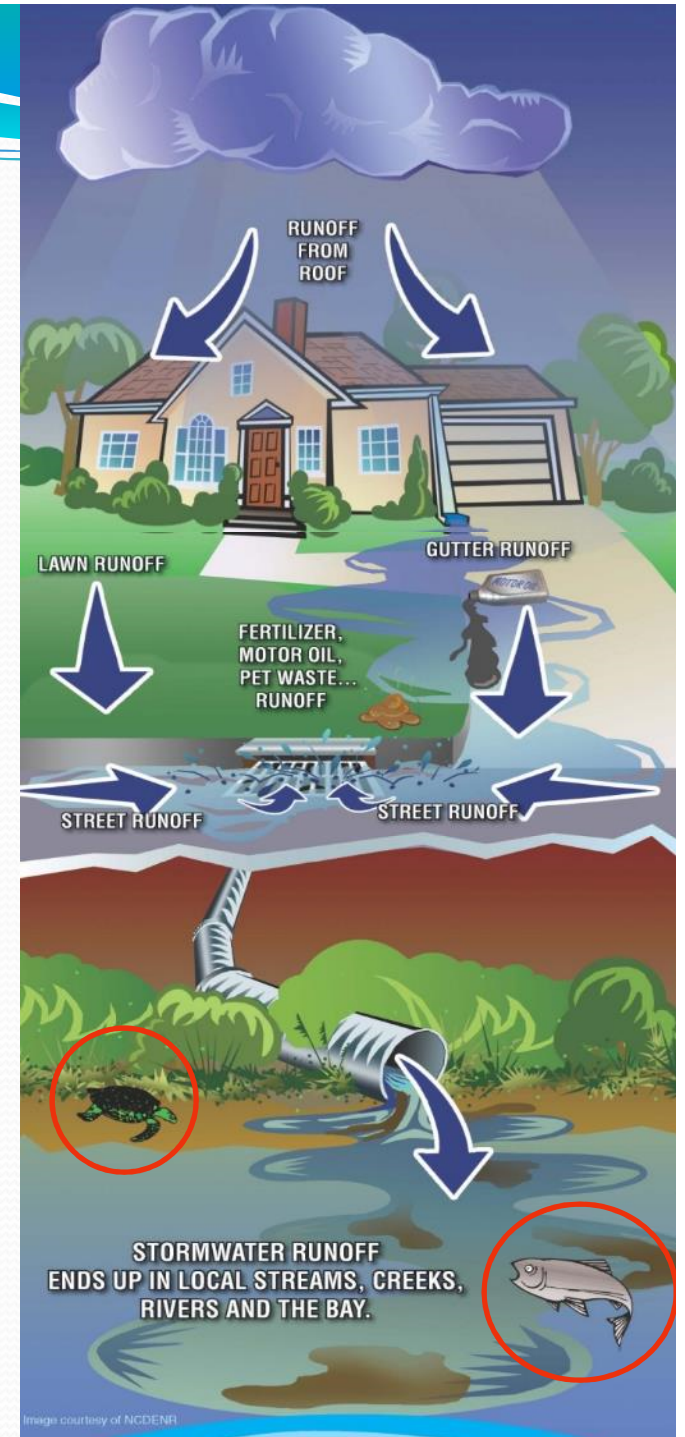
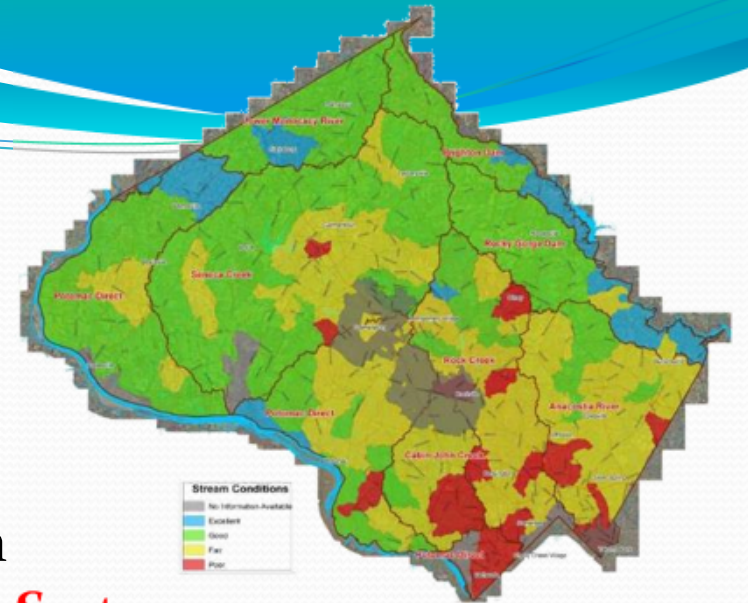


Image courtesy of NCDENR

# What is the County doing to protect our Streams?

- Must meet regulatory requirements
  - Federal Clean Water Act permit program
  - **MS4 = Municipal Separate Storm Sewer System**
- Applies to all large and medium Maryland jurisdictions
- County programs
  - Restore our streams and watersheds
    - Add runoff management
  - Meet water quality protection goals
    - Reduce pollutants getting into our streams
  - Educate and engage all stakeholders
    - Individual actions make a difference
  - Focus on watersheds showing greatest impacts







# MS4 permit, what is it?

- Montgomery County is responsible for:
  - What goes into our storm drain pipes
  - What comes out of them
  - What flows into the streams
- Requires additional stormwater management for **20 percent** of uncontrolled impervious surfaces (3,778 acres)



# Design Goals for Ponds

- Channel Protection Volume (CPV)
  - Designing a pond to capture 2.6 inches of rain (a 1-year storm event)
  - Storing and slowly releasing this rain event for 12 to 24 hours
  - Main Objective for this Design: Provide the greatest impact to reduce downstream erosion
- Water Quality Volume (WQV)
  - Capturing and filtering out the pollutants during a 1-inch rain event, and is based on impervious area
  - Main Objective for this Design: Reduce nutrients from entering the stream
- Ideal Situation
  - Design a facility that does both with the land area being the only limiting factor

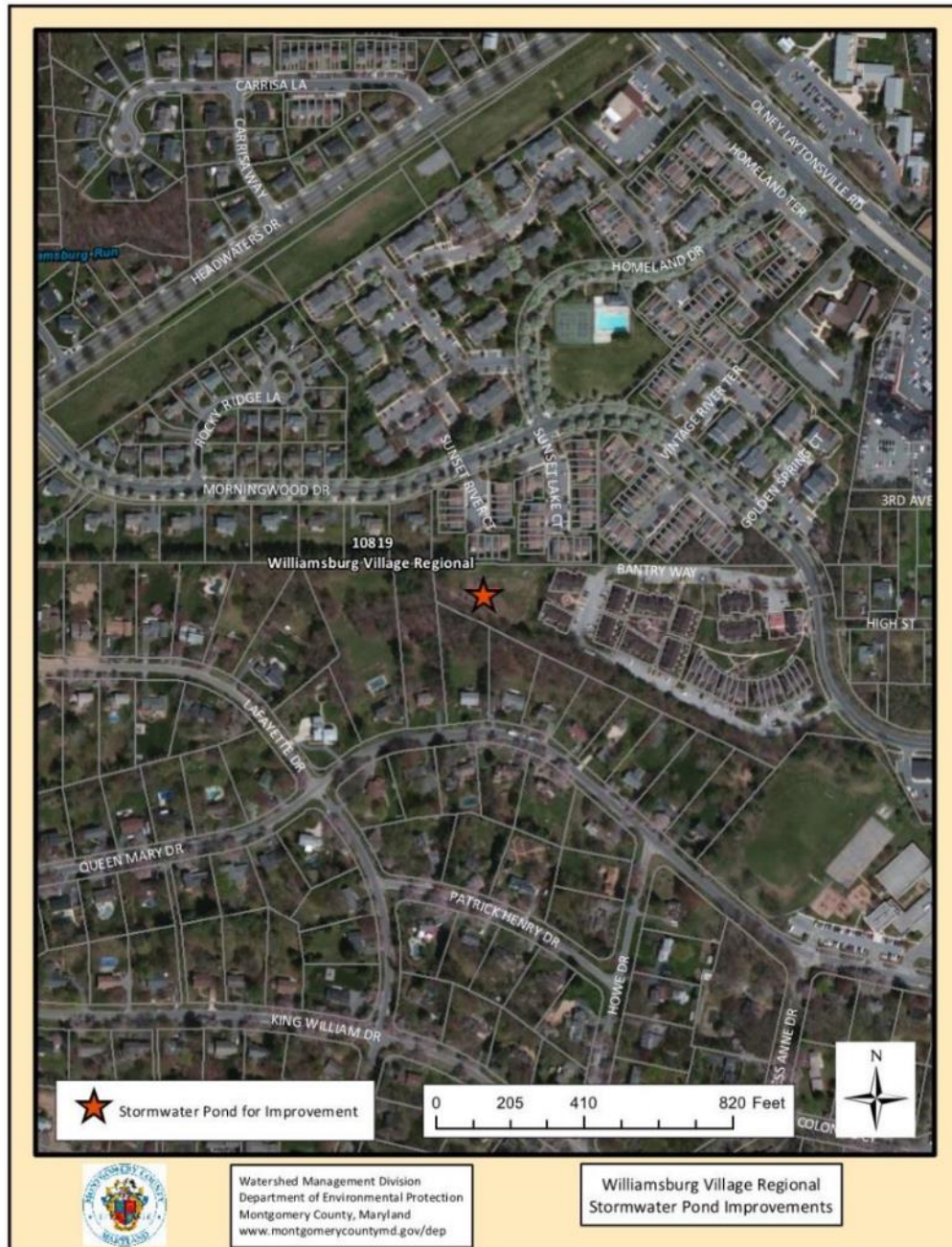




# Goals of the Projects

- Create a permanent pool to capture nutrients and provide water quality treatment (full Water Quality Volume, WQv))
- Capture “peak-flow” runoff from impervious surfaces within the stormwater pond (Channel Protection Volume, (CPv))
- Enhance site aesthetics
- Retrofit or replace existing structures

## Williamsburg Village site vicinity map



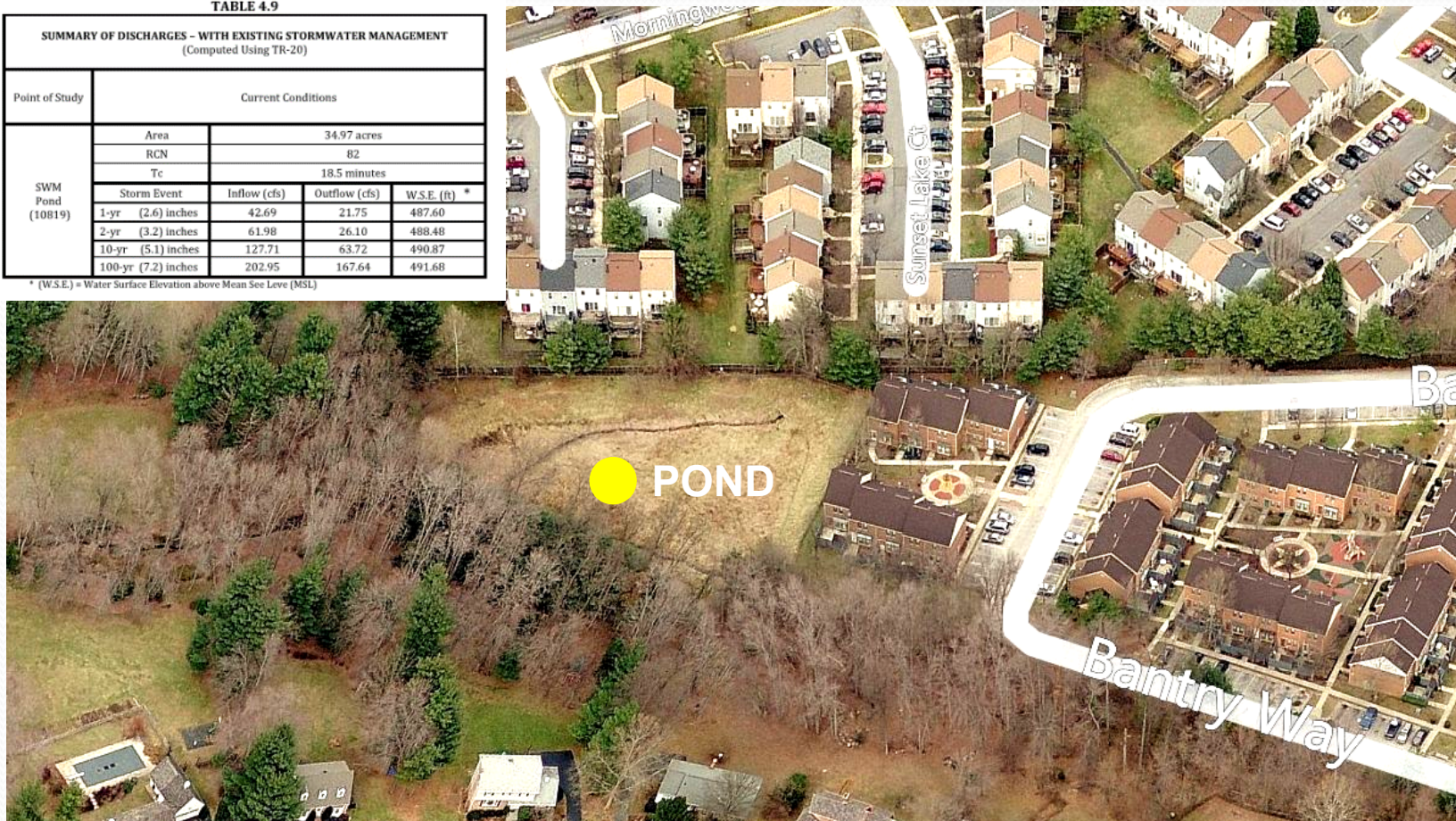


# Stormwater Pond Site Photos

**TABLE 4.9**

SUMMARY OF DISCHARGES - WITH EXISTING STORMWATER MANAGEMENT (Computed Using TR-20)				
Point of Study	Current Conditions			
SWM Pond (10B19)	Area	34.97 acres		
	RCN	82		
	Tc	18.5 minutes		
	Storm Event	Inflow (cfs)	Outflow (cfs)	W.S.E. (ft) *
	1-yr (2.6) inches	42.69	21.75	487.60
	2-yr (3.2) inches	61.98	26.10	488.48
	10-yr (5.1) inches	127.71	63.72	490.87
	100-yr (7.2) inches	202.95	167.64	491.68

\* (W.S.E.) = Water Surface Elevation above Mean Sea Level (MSL)





# Site Photos





# Site Photos





# Drainage Area Map

Task Order WRE 12-37  
Asset Num. 10819  
Williamsburg Village Regional

6/9/2015

## Legend

- Flow Path
- Drainage Area
- Storm Manhole
- Storm Inlet
- Outlet
- Headwall
- Hydrant
- Sanitary Manhole
- Channel
- Storm Drain
- Water Main
- Sanitary Main
- Property Line
- Forest
- Soil Boundary
- Impervious
- 2ft Contour

## Drainage Area Map

## Location Map



**AMT**

0 50 100 200 300 Feet

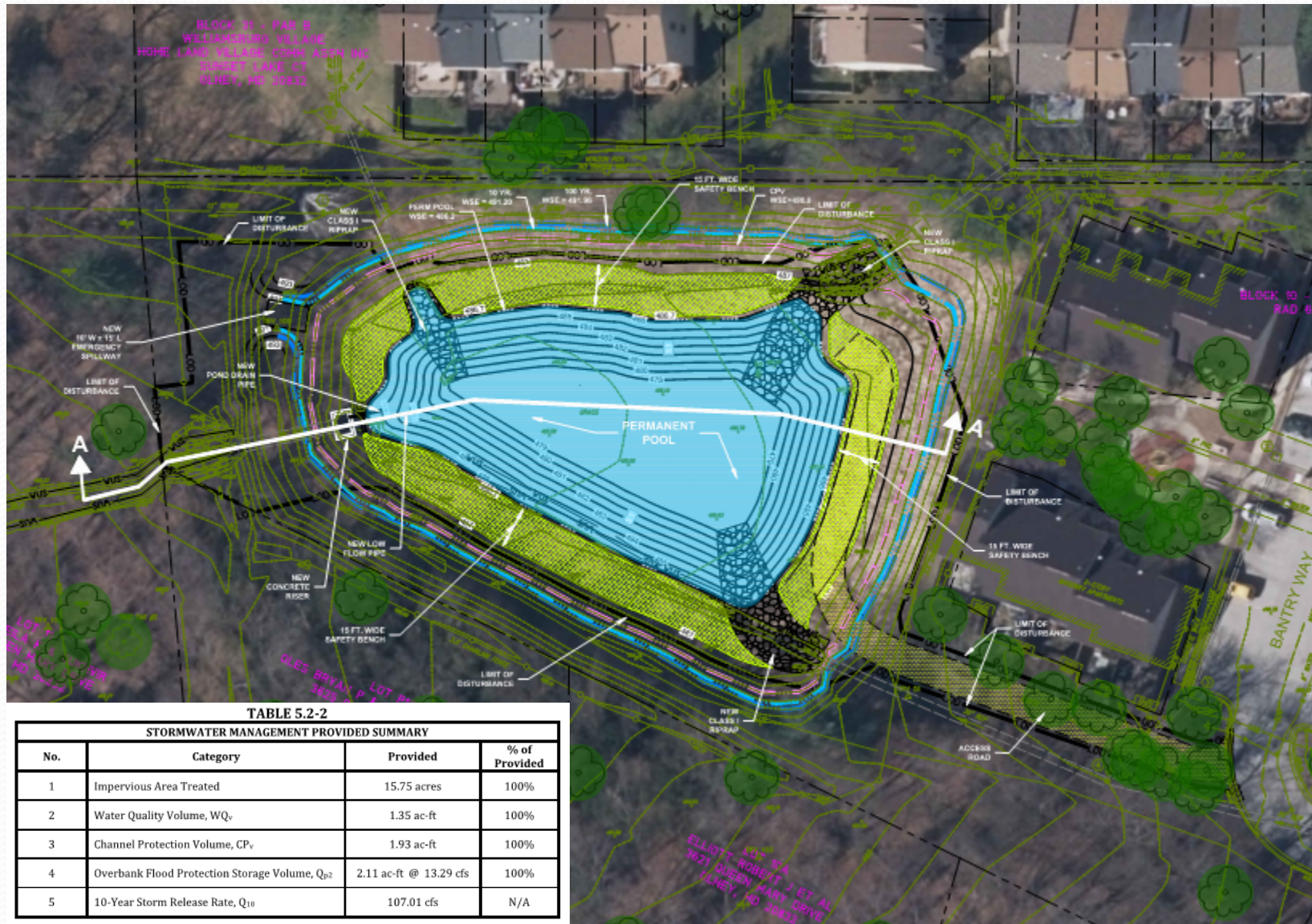


POND #10819 - TIME OF CONCENTRATION		
TO SEGMENT	DESCRIPTION	LENGTH (FT)
A → B	SHEET	101
B → C	SHALLOW CONCENTRATED	350
C → D	CHANNEL	573

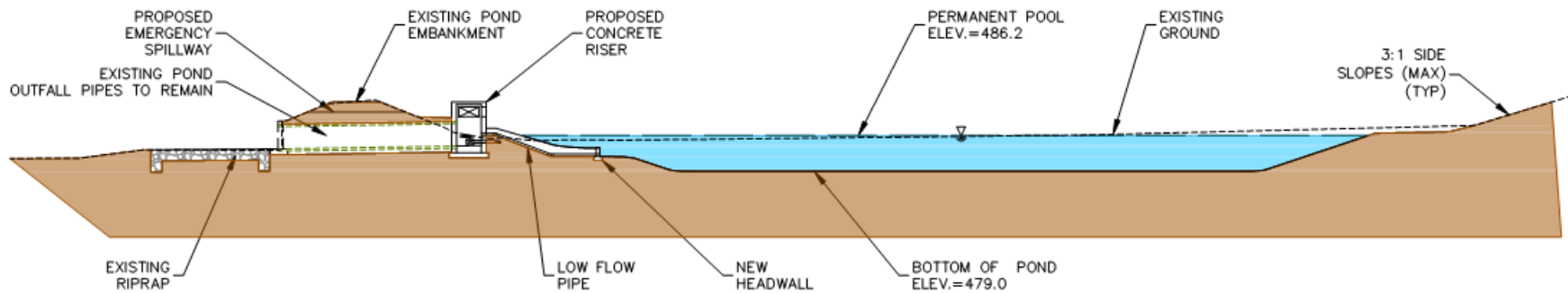
POND #10819 - DRAINAGE AREA SUMMARY								
SOIL TYPE	BUILDING	PARKING/ROAD	RECREATION	SIDEWALK	TOTAL IMPERVIOUS	OPEN SPACE	WOOD	TOTAL AREA
B	2.15	4.27	0.04	0.80	7.26	8.82	-	16.07
C	1.00	2.37	-	0.20	3.57	7.85	-	11.40
D	1.55	2.95	-	0.05	4.55	2.10	-	6.67
W	0.26	0.04	-	0.08	0.38	0.46	-	0.83



# Proposed Pond – Plan View



# Proposed Pond Profile



SECTION A-A

## LEGEND

- PERMANENT POOL ELEVATION (486.20)
- POOL (3-6 FOOT DEPTH)
- - - EXISTING GROUND SURFACE
- PROPOSED GROUND SURFACE



# Examples of wet pond retrofits



In Construction



1 Year After Construction



5 Years After Construction



5 Years After Construction



# What to expect during construction

- **Duration**
  - Approximately 4-6 months (weather dependent)
- **Construction Hours**
  - Monday through Friday, 7AM – 4PM
- **Safety**
  - Work limits will be fenced with high visibility orange construction safety fence
- **Traffic**
  - Access off Bantry Way
- **Noise**
  - Contractor is required to comply with Montgomery County Noise Ordinance
- **Sediment**
  - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads







# Schedule

## Williamsburg Village Stormwater Pond Retrofit Projects

- Preliminary Site Assessment – Fall 2015
- Public meeting to discuss concept designs– 7/26/17
- Revise Design Plans – Winter 2018
- Permits issued – Fall 2018
- Construction – Winter/Spring 2019



# Questions/Comments?

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**Williamsburg Village Project Page:**

<https://www.montgomerycountymd.gov/water/restoration/williamsburg-regional.html>